REMARKS

This application has been carefully reviewed in light of the Office Action dated November 28, 2003. Claims 1 and 3 to 11 are pending in the application, with Claim 2 having been canceled and Claims 10 and 11 having been added. Claims 1, 3, 6, 7 and 9 are the independent claims herein. Reconsideration and further examination are respectfully requested.

Applicants wishe to thank the Examiner for the indication that Claims 3, 4, 7 and 8 would be allowable if they are rewritten into independent form. Claims 3 and 7 have been rewritten into independent form and therefore, Claims 3, 4, 7 and 8 are believed to be allowable. However, Applicants submit that these claims are also allowable for at least the same reasons as set forth below for the other independent claims.

Claims 1, 2, 5, 6 and 9 were rejected under 35 U.S.C. § 102(e) over U.S. Patent No. 6,011,878 (Ushida). Reconsideration and withdrawal of the rejections are respectfully requested.

The present invention as claimed in Claims 1, 6 and 9 concerns image processing. According to the invention, multivalued image information is input and converted into first data representing a number of print dots for each pixel. Second data representing the total number of print dots in each region made up of a plurality of pixels is then generated based on the first data, with the generated second data being stored in a memory. A plurality of the second data is then input from the memory to a print dot layout determination unit, where the plurality of second data comprises the second data of a region of interest and the second data of at least one region around the region of interest.

The print dot layout determination unit determines a print dot layout in the region of interest in accordance with the plurality of the second data.

Independent Claims 3 and 7 include features substantially corresponding to those of Claims 1, 6 and 9.

The applied art is not seen to disclose or to suggest the features of the present invention, and in particular, is not seen to disclose or to suggest at least the feature of generating, based on converted input multivalued image data, second data representing the total number of print dots in each region made up of a plurality of pixels, storing the generated second data in a memory, and determining a print dot layout in a region of interest in accordance with second data of the region of interest and second data of at least one region around the region of interest.

Ushida merely discloses an image processing apparatus that outputs multilevel image data converted by error diffusion processing. In the apparatus, "the density of the pixel of interest and the densities of the pixels of interest to the left and right are compared to sense whether the pixel of interest is at the edge portion of the image. If the pixel of interest is at the edge, small dots are arrayed in dependence upon the tendency exhibited by the pixel density, thereby improving the reproducibility of the edge portion." (Column 14, lines 42 to 48.) Thus, Ushida does not determine a dot array for each region made up of a plurality of pixels, but rather, for each pixel individually. As such, Ushida is not believed to disclose or to suggest generating, based on converted input multivalued image data, second data representing the total number of print dots included in each region made up of a plurality of pixels.

Moreover, Ushida temporarily stores and uses the input image data to determine a dot array according to the tendency exhibited by the pixel density. In contrast, the present invention determines a print dot layout in a region of interest in accordance with second data of the region of interest and second data of at least one region around the region of interest. For example, in Ushida, in a case where one pixel is represented by three printed dots, Ushida has to store 2-bit data (0~3) for each pixel, but the apparatus of the present invention can determine a print dot layout by storing, at most, 3-bit data (0~6) for each region made up of two pixels. As a result, the present invention can use a memory much more efficiently that Ushida. Thus, Ushida is not believed to disclose or to suggest the features of the present invention.

In view of the foregoing amendments and remarks, the entire application is believed to be in condition of allowance and such action is respectfully requested at the Examiner's earliest convenience.

Applicants' undersigned attorney may be reached in our Costa Mesa, California office at (714) 540-8700. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,

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- 11 -